



Multimodality

Transport planning  
and execution

# Agent-based SimulaTion for Resilience Of Intermodal Transportation (ASTROIT)

Developed by :



Project by :



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Operational fields

Technologies

Solutions



# AGENT-BASED SIMULATION FOR RESILIENCE OF INTERMODAL TRANSPORTATION (ASTROIT)

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## Solution description

ASTROIT is a customizable simulation tool designed to model cargo transport as an agent-based system.

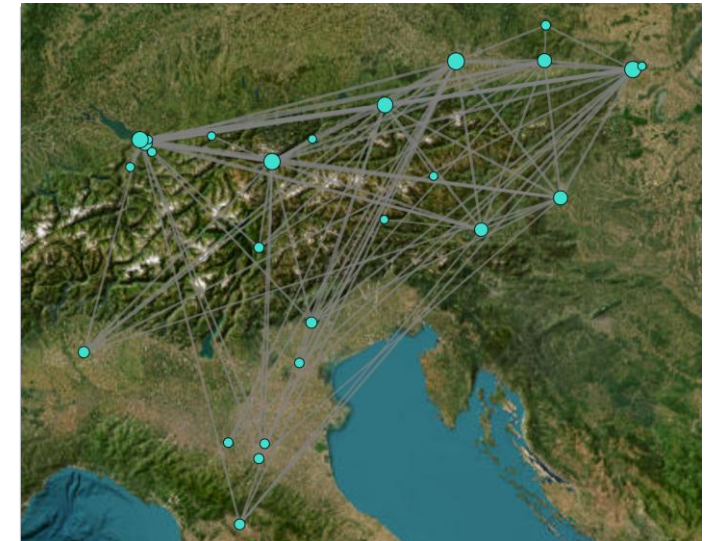
Each cargo unit (agent) autonomously selects the most optimal route from origin to destination based on user-defined cost minimization preferences (e.g., operational cost per km, CO<sub>2</sub> emissions per km, and travel time).



## Benefits

- **Vehicle Customization:** Vehicles differ by type, capacity, speed, CO<sub>2</sub> emissions, and operational costs. They operate on specific, scheduled routes suitable for their type.
- **Dynamic Disruption Handling:** Network disruptions lower the performance of nodes/edges, increasing delays or causing total failure. Agents recalculate routes after a set reaction time.
- **Congestion Management:** Overloaded nodes trigger the spawning of additional vehicles on connecting routes to relieve congestion. These auxiliary vehicles are removed once normal conditions resume.
- **Full Customization:** Users can configure the network layout, vehicle characteristics, route schedules, and disruption scenarios at both node and edge levels.

Main beneficiary:  
Carriers, LSPs, Infrastructure  
managers



Technology readiness level : **6**  
Implementation stage :  
*Pilot*

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get in touch  
with you!



Would you like to know more?  
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